INTRAOPERATIVE ASSESSMENT OF MITRAL AND AORTIC VALVES: PROBLEMS AND PITFALLS

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TEE is generally recognised as providing a superior window for examination of the MV compared to TTE. A comprehensive examination should include a complete evaluation of the cause and severity of dysfunction, and differentiate between disease due to primary valve pathology (organic – stenosis or regurgitation) and secondary valve dysfunction (functional) due to annular dilatation, papillary muscle dysfunction, or poor LV function and remodelling.

The views required for a standard examination are;

Transgastric short and long axis
Mid-esophageal 4 chamber view
(Standard view at 0 degrees evaluates A2;P2; flexion or withdrawal of probe evaluates A1;P1; retro flexion or insertion of probe evaluates A3;P3)
Mid oesophageal mitral commissural view (50-90 degrees)
Mid oesophageal long axis(LVOT) view (110-145 degrees)

Colour flow, pulse wave and continuous wave doppler are available for assessing the nature and severity of mitral valve lesions.

Particular attention needs to be paid to;
- The 2D appearance noting any abnormality of the leaflets, the coaptation surface, any evidence of calcification.
- The direction and severity of any regurgitant jet. Factors to note include jet area, proximal jet width, regurgitant orifice area, regurgitant volume and fraction, proximal isovelocity area(PISA).
- Other indicators i.e. pulmonary venous flow, LA dimensions.
- Mean transvalvular gradient; pressure half-time.

Aortic Valve.
TEE is able to provide good short and long axis views of the aortic valve.
The views required for a standard examination are;
Midoesophageal long axis view
Midoesophageal AV long axis and short axis view
Transgastric Long axis view
Deep transgastric long axis view

Aortic valve area is best calculated as the Effective Orificial Area, using Doppler.
Although the deep transgastric and transgastric long axis views may be used, EOA is most simply calculated using the apical 4 chamber TTE view, owing to superior alignment of the Doppler beam.
Normal AV area can be calculated in the short axis by planimetry for purposes of calculating CO etc.

AV regurgitation is best calculated using CF Doppler in the mid oesophageal AV long axis view, preferably using M mode CF Doppler.
Jet width/LVOT width ratio correlates with averaged regurgitant fraction and severity of regurgitation.

Problems may arise in evaluation of mitral and aortic valve disease due to a number of reasons. Examples will be presented.